

PATENT
Expedited Procedure
After Final Response
Under 37 CFR 1.116

IN THE UNITED STATES PATENT & TRADEMARK OFFICE

In re application of)	
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HAYEK ET AL.)	
)	
Appl. No.:	09/998,489)
)	Examiner W. Daniel
Confrm. No.	6375)
)	Art Unit 2617
Filed:	30 November 2001)
)	Atty. Docket No. CS11336
Title:	"RF Receivers And Methods"	

RESPONSE UNDER 37 C.F.R. § 116

Assistant Commissioner for Patents
Alexandria, VA 22313

Sir:

Kindly amend the specification as indicated below.

In the Claims:

1. (Original) A method in intermediate frequency and direct conversion receivers having a pre-selection filter passband, comprising:

mixing a receive signal at a mixer injection frequency outside the pre-selection filter passband,

the mixer injection frequency proportional to a first quantity divided by a second quantity,

the first quantity proportional to a difference between the receive signal frequency and an intermediate frequency, the second quantity proportional to a difference between unity and a quantity proportional to a reciprocal of a chopper divide ratio.

2. (Previously Presented) The method of Claim 1, chopping the receive signal at an input chopper before mixing, chopping the receive signal at an output chopper after mixing, the input and output choppers having a chopper frequency proportional to the mixer injection frequency divided by the chopper divide ratio.

3. (Original) The method of Claim 1, increasing a gain of the receive signal before mixing.

4. (Original) The method of Claim 1,
measuring a condition of the receive signal,
mixing the receive signal at a mixer injection frequency proportional to a difference between the desired signal frequency and an

intermediate frequency if the receive signal condition is below a predetermined threshold;

mixing the receive signal at a mixer injection frequency proportional to the first quantity divided by the second quantity if the receive signal condition is above the predetermined threshold.

5. (Original) A method in intermediate frequency and direct conversion receivers having a pre-selection filter passband (BW_{PSF}), comprising:

mixing a receive signal at a mixer having a mixer injection frequency (f_{LO}) proportional to $(f_{RX} - f_{IF}) / (1 - K_{LO}/NL)$,

chopping the receive signal with a chopper having a chopper frequency (f_{CHOP}) proportional to (f_{LO}/NL) ,

where (f_{RX}) is a frequency of the receive signal, (f_{IF}) is an intermediate frequency of the receiver, NL is a divide ratio of the chopper, (K_{LO}) is a VCO proportionality constant divide ratio.

6. (Original) The method of Claim 5, selecting the mixer injection frequency (f_{LO}) so that an absolute value of $(f_{RX}-f_{LO})$ is greater than the preselection filter passband (BW_{PSF}).

7. (Original) The method of Claim 5, selecting the mixer injection frequency (f_{LO}) so that a VCO frequency, f_{VCO} , is outside a bandwidth of receive signal harmonics.

8. (Original) The method of Claim 5,
measuring a strength of the receive signal,

mixing the receive signal at the mixer having the mixer injection frequency (f_{LO}) proportional to $(f_{RX}-/+f_{IF})/(1/-+K_{LO}/NL)$ when the receive signal strength is above a predetermined threshold;

mixing the receive signal at a mixer having a mixer injection frequency (f_{LO}) proportional to $(f_{RX}-/+f_{IF})$ when the receive signal strength is below the predetermined threshold.

9. (Original) The method of Claim 8, chopping the receive signal at an input chopper before mixing, chopping the receive signal at an output chopper after mixing, the input and output choppers having a chopper frequency (f_{CHOP}) proportional to the mixer injection frequency divided by the chopper divide ratio (f_{LO}/NL).

10. (Original) The method of Claim 8, increasing a gain of the receive signal before mixing if the receive signal gain is below a threshold.

11. (Currently Amended) A method in intermediate frequency and direct conversion receivers, comprising:

receiving a signal;

providing a mixer injection frequency by dividing a voltage controlled oscillator output by a frequency divide ratio,

the voltage controlled oscillator having a frequency outside a bandwidth of received signal harmonics;

mixing the received signal at a mixer injection frequency outside a bandwidth of a fundamental frequency of the received signal, the mixer injection frequency proportional to a first quantity divided by a second quantity, the first quantity proportional to a difference between the received

signal frequency and an intermediate frequency, the second quantity proportional to a difference between unity and a quantity proportional to a reciprocal of a chopper divide ratio; and

chopping the received signal at a chopper frequency proportional to the mixer injection frequency divided by the chopper divide ratio.

Claim 12 (Canceled).

13. (Previously Presented) The method of Claim 11, dividing the voltage controlled oscillator output by a frequency divide ratio equal to one.

Claims 14-17 (Canceled).

18. (Original) The method of Claim 11, mixing the received signal at a mixer injection frequency outside a channel bandwidth of the received signal.

Claims 19-27 (Canceled).

REMARKS

The application stands subject to a final Office action mailed on 29 January 2008. Reconsideration of the application is respectfully requested.

Claims 1-10 stand allowed.

Claim 12 stands objected for dependence on a rejected base claim. Claim 11 was amended to include all of the limitations of allowable Claim 12. Amended Claim 11 is therefore now in condition for allowance.

The amendment should be entered because it raises no new issues and places the application in condition for allowance.

Claims 13 and 18 depend from amended Claim 11 and are also in condition for allowance.

Claims 12, 14-17 and 19-27 have been canceled.

Claims 1-11, 14 and 18 are pending.

In view of the discussion and any amendments above, kindly withdraw the rejections and allow the Claims to issue in a United States Patent without delay.

Respectfully submitted,

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